

REMARKS/ARGUMENTS

In the Office Action mailed February 1, 2010, claims 1-18 were rejected. In response, Applicant hereby requests reconsideration of the application in view of the amendments and the below-provided remarks.

For reference, claims 1-3, 6-13, and 15 are amended. Claim 1 is amended to clarify the language of the claim and to recite language related to the contact between the interconnects. Claims 6 and 13 are amended to recite similar language. Consequently, claims 16 and 17 are canceled. These amendments are supported by the original language of the claims, as well as the subject matter described in the specification at page 2, lines 17-32. Claims 2 and 3 are amended to refer to the distance along the contact relative to the overlap of an interconnect with an adjacent test pad. Claims 11 and 12 are amended to recite similar language. These amendments are supported by the subject matter illustrated in Figs. 1-4 and 9-12, as well as the accompanying description in the specification. Claims 7-12 are also amended to refer to the “system” rather than the “structure” of claim 6. Claim 15 is amended to refer to the “method” rather than the “structure” of claim 14.

Additionally, claims 20-22 are added to recite further language related to the contact. These amendments are supported, for example, by the subject matter described in the specification at page 2, lines 17-32.

Claim Rejections under 35 U.S.C. 102

Claims 1-18 were rejected based on one or more cited references. The cited reference(s) relied on in these rejections include:

Thomas (U.S. Pat. No. 3,808,527, hereinafter Thomas)

In particular, claims 1-18 were rejected under 35 U.S.C. 102(b) as being anticipated by Thomas. However, Applicant respectfully submits that these claims are patentable over Thomas for the reasons provided below.

Independent Claim 1

Claim 1 is patentable over Thomas because Thomas does not disclose all of the limitations of the claim. Claim 1 recites:

A structure comprising:

at least one proportional variable resistor suitable for electrically measuring unidirectional misalignment of stitched masks in etched interconnect layers, said variable resistor comprising:

at least a first mask and a second mask that when superimposed comprise:

at least two test pads, wherein the two test pads are both formed by the first mask;

two interconnects between the test pads; and

a contact having a smaller width than the interconnects, wherein the contact is formed by the same mask as at least one of the interconnects, wherein a resistance between the test pads is dependent on a distance along the contact between the interconnects, and the resistance is indicative of the misalignment of the first and second masks.

(Emphasis added.)

In contrast, Thomas does not disclose all of the limitations of the claim. In particular, Thomas does not disclose the contact is formed by the same mask as at least one of the interconnects.

Thomas generally describes a system for electrically measuring alignment between design elements. Thomas, abstract. Generally, the design elements are formed sequentially in a wafer by using a different mask to make each element. Thomas, col. 1, lines 27-29. The system of Thomas specifically includes a wafer 10 with diffusion patterns 12, 14 formed by a mask. Thomas, col. 3, lines 13-18. An insulating layer 20 is formed on the wafer 10 over the diffusion patterns 12, 14. Thomas, col. 3, lines 18-20. Another mask 22 is used to form apertures 48-64 in the insulating layer for forming current carrying contacts 48'-64'. Thomas, col. 3, lines 54-66. Pads 1-9 and interconnects 66, 68 are then formed on the insulating layer 20. Thomas, col. 4, lines 4-8. Thus, there are at least three layers in the device of Thomas:

1. The wafer 10 in which the diffusion patterns are formed;

2. The insulating layer 20 in which the contacts are formed; and
3. The interconnect layer in which the interconnects are formed.

It should be noted that Thomas does not describe forming the contacts in one of the same layers as the interconnects or the diffusion patterns. Rather, the contacts are formed in a separate layer that is distinct from the interconnect layer and the wafer (diffusion pattern) layer. Therefore, Thomas does not disclose the contact is formed by the same mask as at least one of the interconnects.

For the reasons presented above, Thomas does not disclose all of the limitations of the claim because Thomas does not disclose the contact is formed by the same mask as at least one of the interconnects, as recited in the claim. Accordingly, Applicant respectfully asserts claim 1 is patentable over Thomas because Thomas does not disclose all of the limitations of the claim.

Independent Claims 6 and 13

Applicant respectfully asserts independent claims 6 and 13 are patentable over the cited reference at least for similar reasons to those stated above in regard to the rejection of independent claim 1. Each of these claims recites subject matter which is similar to the subject matter of claim 1 discussed above. In particular, claim 6 recites “a second mask comprising at least one interconnect and a contact,” and claim 13 recites “providing a second mask comprising at least one interconnect and a contact.” Although the language of these claims differs from the language of claim 1, and the scope of each claim should be interpreted independently of other claims, Applicant respectfully asserts that the remarks provided above in regard to the rejection of claim 1 also apply to the rejections of these claims.

Dependent Claims

Claims 2-5, 7-12, 14, 15, 18, and 20-22 depend from and incorporate all of the limitations of the corresponding independent claims 1, 6, and 13. Applicant respectfully asserts claims 2-5, 7-12, 14, 15, 18, and 20-22 are allowable based on allowable base

claims. Additionally, each of claims 2-5, 7-12, 14, 15, 18, and 20-22 may be allowable for further reasons, as described below.

In regard to claims 2, 3, 11, and 12, Applicant respectfully submits that these claims are also patentable over Thomas because Thomas does not disclose all of the limitations of the claims. In particular, Thomas does not disclose a proportional relationship between the resistance and an overlap of an interconnect with an adjacent test pad. In fact, the test pads are formed by the same mask as the adjacent interconnects. Thus, there is no overlap between the test pads and the adjacent interconnects. Moreover, there is no variability in the locations of the test pads and the adjacent interconnects. Therefore, Thomas does not disclose a proportional relationship between the resistance and an overlap of an interconnect with an adjacent test pad. Accordingly, Applicant respectfully asserts that claims 2, 3, 11, and 12 are patentable over Thomas because Thomas does not disclose all of the limitations of the claims

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the amendments and the remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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